DOCUMENT RESUME

ED 187 085 FL 010 940

AUTHOR Bacle, Gabriel L.
TITLE Civilisations of the Left Cerebral Hemisphere?
PUB DATE [79]
NOTE 10p.

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Auditory Perception; *Cerebral Dominance; *Consonants; Lateral Dominance; *Neurolinguistics; Perceptual Development; *Vowels; Western Civilization
IDENTIFIERS *Japanese People; Tsunoda (Tadanobu)

ABSTRACT

Research conducted by Tadanobu Tsunoda on auditory and visual sensation, designed to test and understand the functions of the cerebral hemispheres, is discussed. Tsunoda discovered that the Japanese responses to sounds by the left and the right sides of the brain are very different from the responses obtained from people from other countries. His tests show that a Japanese left cerebral hemisphere receives a wide range of sounds: linguistics sounds (vowel and consonant sounds); and nonlinguistic sounds, including cries, emotional utterances, traditional Japanese musical instruments, sounds of wind, waves, and creeks. In comparison, the range of sounds received by the left hemisphere of people from western countries is narrower, apparently limited to syllables made up of consonant and vowel sounds. On the other hand, the right hemisphere of a Japanese receives a very limited amount of artificial or man-made sounds: mechanical sounds, Western musical instruments, and noise. Japanese living outside of Japan where Western languages are spoken do not show the typical Japanese pattern after the second or third generation. However, the children of Americans or Koreans who are exposed from their birth to a complete Japanese environment have the Japanese brain functioning system. It appears that the uniqueness of the Japanese brain functions comes from the influences of the environment (SW)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED187085

Civilisations of the left cerebral hemisphere?

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Gabriel Racle

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

FL010940

Gabriel L. Racle

Last year, an astonishing book was published, which, up to now, hasn't been discussed in North American or European specialized publications. There is a very simple explanation for this fact: the book entitled *Nihonjin no nō*, is in Japanese. The title means: The Japanese Brain, and its author, Dr. Tadanobu Tsunoda, is a lecturer at Tokyo Medical and Dental University.

Left hemisphere predominance

For more than two years, Dr. Tsunoda has been conducting research on auditory and visual sensations, in an effort to test and understand the functions of the cerebral hemispheres. Using his own method and studying the brain functions of the Japanese, he has discovered that the Japanese responses to sounds by the left and the right sides of the brain were very different from the responses obtained with people from other countries.

The Tsunoda's tests show that a Japanese left cerebral hemisphere receives a wide range of sounds: linguistic sounds (vowel and consonant sounds) and non-linguistic sounds: cries emotional utterances, traditional Japanese musical instruments, sounds of wind, waves, creeks, etc. In comparison, the range of sounds received by the left hemisphere of people from western countries is conspicuously narrower, apparently limited to syllables made up of consonant and vowel sounds. On the other hand, the right hemisphere of a Japanese receives a very limited amount of artificial or man-made sounds: mechanical sounds, Western musical instruments, noise. The non-Japanese right hemisphere takes care of all the sounds handled by the Japanese left hemisphere and of the vowel sounds which have no meaning in themselves (steady-state vowel).

But, Japanese living outside of Japan where Western languages are spoken (United States, Brazil, Canada) do not show the typical Japanese pattern after the second or the third generation. They have developed, on the contrary, the Western

pattern, while the children of Americans or Koreans who are exposed from their birth to a complete Japanese environment have the Japanese brain functioning system. Consequently, it appears that the uniqueness of the Japanese brain functions is not a hereditary phenomenon, but comes from the influences of the environment.

An explanation

"If indeed the uniqueness of the Japanese brain is determined by environmental factors, what exactly are these factors?" To get an answer to this question, Dr. Tsunoda analyzed the component of environment, and concluded that the first important environmental factor is language. "Even before going into the auditory aspect of spoken Japanese, I thought it important to consider the visual aspect of the language". The Japanese written language is a complex system combining Kanji (Chinese characters), hiragana and katakana (typically, hiragana is used for writing grammatical particles and certain native words; katakana is typically used for writing foreign words and names) which could eventually have an effect on the brain functioning system. But tests conducted with blind from birth people showed that the written aspect of the language has nothing to do with the problem! Japaneses born blind demonstrate the same characteristics as other Japanese.

On the contrary, the spoken language seems to have the strongest influence on brain functions, and not only for Japanese. But there is an important difference between Japanese and non-Japanese. The "steady-state vowels" are received by the right cerebral hemisphere in the case of non-Japanese and by the left hemisphere by Japanese. The explanation of this fact is related to the Japanese language itself. The Japanese vowel system has two major characteristics: all Japanese syllables end in vowels, and any one of the five vowels (or five sounds) can have a meaning in itself; furthermore, two or more vowels (or sounds) can be combined

to create expressions. Tsunoda gives an example of that with this twenty one syllable sentence in which all the syllables are vowels:

Ue o ui, oi o ooi, ai o ou, aiueo

(Worrying about hunger, disguising his old age,

he chases love, a love-starved man)

This particularity of the Japanese language could affect the brain functions in transfering automatically all vowels sounds (or closely connected sounds) to the left hemisphere, be they linguistic sounds or emotional or natural sounds. Consequently, the Japanese left hemisphere has to take care of all sounds which are related to reason, nature and emotion. This could be, for Tsunoda, a key to the understanding of the traditional culture of the country and the mentality of the people.

Consequences

"Since emotional functions in the Japanese are controlled mainly by the left cerebral hemisphere, which is also in charge of linguistic reception and logic, Japanese may be more likely than others, among the "advanced" peoples, to let emotional stimuli confuse their thinking mechanisms". In other words, if Japanese are emotional people, this could be the result of their brain functioning system. Other of Tsunoda's discoveries are also of exceptional interest, for example, his discoveries concerning the way the cigarette affects the brain functions of Japanese. After smoking a cigarette, reception of mechanical sounds, which is usually handled by the right hemisphere (in both Japanese and non Japanese) is taken over by the left hemisphere in Japanese. It takes 60 tc 90 minutes to return to the normal system. So, the left hemisphere of a great smoker is always at work. As many people think that they work better if they smoke, and since the pressure of the society in general and of the school system in particular is very high, the

consumption of cigarettes is constantly growing. Consequently, the Japanese work with their left hemisphere, more or less constantly, and the country of Japan is the result of the activity of the left hemisphere, which is constantly stimulated by smoking, perfumes, incense, etc.

Among the consequences of the predominance of the left side of the cerebral hemisphere could be a reduction of the analogical function, and in intuitive activities, inspiration and other irrational processes. This contributes to the elimination of creativity, discoveries, inventions. From this perspective a study of Japanese society and of the recent history of the country could be extremely interesting; the very well documented book published by Reischauer (1979) in fact supports this remark.

The Japanese school system emphasizes memorization; entrance exams (high schools, colleges) force students to remember an incredible amount of material, and to overtense their left hemisphere. "The pressures on the examination taker are tremendous, and the whole process is commonly referred as the "examination hell" " (Reischauer, 172). Would it be possible to establish a correlation between the general overtension of the left Japanese hemisphere and the rate of suicides? "rates (of suicides) for youths from 15 to 25 are much higher (than in some other East Asian countries or in the west), probably reflecting the greater pressures of the educational system" (Reischauer, 153). This "relatively high suicides rates for youth may be in part attributable to the "examination hell" "(id., 172). "There can be no doubt, adds Reischauer, that the restlessness and rebellion of university students, once they have achieved the safe haven of the university, come in part as a reaction to the pressures they have been under before then". Is it an other effect of the overtension of the left cerebral side? Could one explain the Americanization of the country (which is an imitation, not a creation), by

a lack of creativity due to the dominance of the left hemisphere? "Industry has quite wisely stressed the learning and adaptation of already known technologies, rather than the creation of new ones..." (id., 226) Does this predominance of the left cerebral hemisphere have something to do with the religiosity of the people (mysticism being related to the right hemisphere)? "If this book, writes Reischauer, dealt with a South Asian or Middle Eastern people, it might well have started with a consideration of religion. Even for North Western nations, religion would have required earlier and fuller treatment. But religion occupies a more peripheral position in Japan" (213).

A confirmation of Dr. Tsunoda's hypothesis could be found by answering our questions. A statistical analysis of the number of discoveries and inventions made by Japanese in comparison with those made by other countries would add an other piece of information. We do know that it is difficult for many Japanese to speak another language, not because of a lack of knowledge, but because of the unusual level of tension of the left side of the brain caused by the utilisation of a foreign language. In fact, as Tsunoda demonstrated, for Japanese, a foreign language has, in many cases, an effect similar to the cigarette (switching of the receptivity of mechanical sounds). "It seems, says Tsunoda, that English is a problem in a category of its own. Japanese study English for years on end, giving painstaking effort, but all that study rarely produces the confidence that one can at last handle even a part of the language adequatly". Is that caused by the languages themselves and their opposite particularities? Or is it caused by the localisation of emotions and ease in the same hemisphere? Or by the way foreign languages are learned in Japan? Much more study has to be done to find an answer. To that end a serious experimentation of the suggestopaedic way of teaching languages should be undertaken in Japan. The suggestopaedic system of teaching integrates

arts, particularly classical music, as an integral part of this holistic pedagogical system. Both are related to the right hemisphere. One of the hypotheses used to explain the role of music relates to the central processes of stimulation and inhibition. The brain works best, particularly in learning situations, when stimulation processes and inhibition processes are harmonized. Learning does not take place solely in a state of vigilance or in one of increased vigilance. Learning may occur in a state of "cerebral readiness", which is a state avoiding overstimulation or inhibition: a state in fact, of optimal tension. In fact, research conducted by the Bulgarian neurologist Balewski has shown that people who moderately accelerate their cerebral bioelectrical activity obtain the best memorization. A further increase in tension has a decreasing effect. Under suggestopaedic conditions (background of classical music), an optimal tension is obtained by the stimulation of the right hemisphere and the relative inhibition of the left hemisphere. The classical music being handled by the right hemisphere of Japanese people, this strategy must be very effective to facilitate the process of learning and to reduce the anxiety of the locutors.

Tsunoda feels strongly that foreign languages have had a negative influence on the intellectual productivity of Japanese writers and thinkers. "They have powerful resources of knowledge and they read voraciously in many cases, but how many Japanese intellectuals seem unable to offer anything new in their work, or to suggest any new ideas! Is this not because their ability to grasp things intuitively, which is the function of the creative right side, is lost, the right having conceded dominance to the left through the overload of work in foreign languages?" Reischauer expresses the same opinion: "Their past history is not (studded) with great creative intellectual figures..." (id.)

In any event, it must be an interesting subject of research to study a culture and a people dominated by his left cerebral hemisphere.

Polynesian language

There is, at least, one other language dominated by vowels, the Polynesian language. In fact, there are many more vowel words in Polynesian than in Japanese: for example, in Tahitian, Aue! (whow), oaoa (glad), E (yes), oe (you), oia (He), ae ia oe (above you), Ia ua aa oia (they bloom) etc. (Constans 1978).

To test the validity of his theories, Dr. Tsunoda conducted the same research, in using the same tests, on a group of people from different Polynesian islands: Eastern Samoa, Tanga, New Zealand. The results show that native Polynesian speakers have the same functional division of the brain as Japanese people, (except for people very well anglicized). Does this cerebral dominance have an effect on the Polynesian society? The point has to be studied.

Conclusion

Dr. Tsunoda's area of research is certainly a promising one and his discovery would have interested sociologists, psychologists, anthropologists and historians. Is that the beginning of something?

References

Constant, P., *Auoue, Conversational manual French-English-Tahitian,* Papeete, 1978.

Racle, G., *Music, Pedagogy, Therapy: Suggestopaedia,* Eric, 1979.

Reischauer, E.O., *The Japanese,* Tokyo, 1979.

Tsunoda, T., *Nihonjin no nō,* Tokyo, 1978.

Tsunoda, T., *Logos and Pathos*, Journal of Dental Health, Vol. 28, 2, 1978.

Tsunoda, T., *The left cerebral hemisphere of the brain and the Japanese Language,* The Japan Foundation Newsletter, Vol. 6, 1, 1978.